

## REMARKS

In the Official Action mailed on **12 November 2010**, Examiner reviewed claims 1-2, 4-11, and 13-20. Examiner rejected claims 1, 10, and 19 under 35 U.S.C. § 103(a) based on Herlihy et al. (U.S. Patent No. 5,428,761, hereinafter “Herlihy”), in view of Ben-Meir et al. (U.S. Patent No. 5,826,073, hereinafter “Ben”). Examiner rejected claims 2, 4-7, 9, 11, 13-16, 18 and 20 under 35 U.S.C. § 103(a) based on Herlihy, Ben, and Rajwar et al. (U.S. Patent No. 7,120,762, hereinafter “Rajwar”). Examiner rejected claims 8 and 17 under 35 U.S.C. § 103(a) based on Herlihy, Ben, Rajwar, and Hecht et al. (U.S. Pub. No. 2003/0064808, hereinafter “Hecht”).

### Rejections under 35 U.S.C. 103(a)

Examiner rejected claims 1, 10, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Herlihy in view of Ben. More specifically, in rejecting these claims, Examiner argued as follows:

Herlihy teaches [...] each entry in the store buffer includes a data value for a store operation that is to be committed to a memory address (Column 5, lines 11-15).<sup>1</sup>

Column 5, lines 11-15 teaches that entry in C the store buffer is manipulated with, and the result is written back or committed to memory address in A. Although Herlihy calls C **a register set, because it is committed to the memory, it is also a store buffer** by the applicant's definition.<sup>2</sup>

Applicant respectfully disagrees with the rejection. Herlihy nowhere discloses that **each entry** in the register set includes a data value for a store operation that

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<sup>1</sup> see office action, page 3

<sup>2</sup> see *id.*, page 8; emphasis added

is to be committed to a memory address. Also, Ben nowhere discloses the embodiments claimed in the instant application.

Herlihy discloses a CPU that includes an internal register set.<sup>3</sup> Herlihy discloses that values from memory can be written to internal registers, and that values from internal registers can be written to memory.<sup>4</sup> Hence, Herlihy discloses that some values in registers can be written to memory. Herlihy nowhere discloses that **each entry, i.e., every entry**, in the register set includes a data value for a store operation that is to be committed to a memory address. More specifically, as was also discussed in Applicant's remarks filed 09 February 2010, **a register can include a data value that is not committed to a memory address.**<sup>5</sup> Hence, because not each entry in the Herlihy register set includes a data value for a store operation that is to be committed to a memory address, the Herlihy register set cannot also be the store buffer of the embodiments claimed in the instant application.

Ben discloses a system for handling self-modifying code. The Ben system includes a register file, a store queue, and cache memory.<sup>6</sup> Ben discloses writing from the store queue to memory.<sup>7</sup> For example, Ben discloses the following:

When a StOp completes execution in store unit 153, the associated target memory address and store data is entered in store queue 159. Later, when the memory write for a StOp is actually committed, this entry is read and retired from store queue 159.<sup>8</sup>

Ben nowhere discloses the claimed embodiments. For example, Ben nowhere discloses committing store buffer entries generated during transactional execution

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3 see Herlihy, col. 4, line 66, to col. 5, line 15; also, FIG. 1

4 see *id.*, col. 5, lines 3-22

5 see Applicant's remarks filed 09 February 2010, pages 9-10

6 see Ben, FIG. 1

7 see *id.*, col. 12, lines 59-61

8 see *id.*, col. 13, lines 20-24

to memory, wherein committing each store buffer entry involves removing the store-mark from, and thereby unlocking, a corresponding store-marked cache line.

In contrast, in the claimed embodiments **each entry** in the store buffer includes a data value for a store operation that is to be committed to a memory address. In addition, in these embodiments the store buffer is a hardware structure **separate from a register file**.

Because Herlihy, and Herlihy in combination with Ben, nowhere discloses the claimed embodiments, Herlihy and Ben cannot possibly render the claimed embodiments obvious.<sup>9</sup> Applicant therefore respectfully requests the withdrawal of the rejection under 35 U.S.C. § 103 based on Herlihy and Ben.

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<sup>9</sup> see MPEP §§ 2141(III) and 2143.01(I)-(VI)

## **CONCLUSION**

It is submitted that the application is presently in form for allowance.  
Such action is respectfully requested.

Respectfully submitted,

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